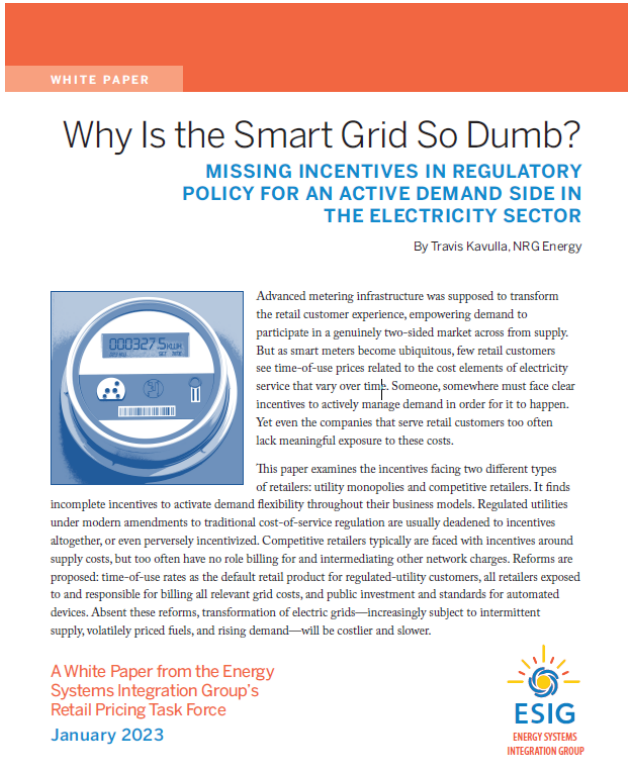


WHITE PAPER

Why Is the Smart Grid So Dumb?

MISSING INCENTIVES IN REGULATORY POLICY FOR AN ACTIVE DEMAND SIDE IN THE ELECTRICITY SECTOR

By Travis Kavulla, NRG Energy

Advanced metering infrastructure was supposed to transform the retail customer experience, empowering demand to participate in a genuinely two-sided market across from supply. But as smart meters become ubiquitous, few retail customers see time-of-use prices related to the cost elements of electricity service that vary over time. Someone, somewhere must face clear incentives to actively manage demand in order for it to happen. Yet even the companies that serve retail customers too often lack meaningful exposure to these costs.

This paper examines the incentives facing two different types of retailers: utility monopolies and competitive retailers. It finds incomplete incentives to activate demand flexibility throughout their business models. Regulated utilities under modern amendments to traditional cost-of-service regulation are usually deadened to incentives altogether, or even perversely incentivized. Competitive retailers typically are faced with incentives around supply costs, but too often have no role billing for and intermediating other network charges. Reforms are proposed: time-of-use rates as the default retail product for regulated-utility customers, all retailers exposed to and responsible for billing all relevant grid costs, and public investment and standards for automated devices. Absent these reforms, transformation of electric grids—increasingly subject to intermittent supply, volatilely priced fuels, and rising demand—will be costlier and slower.

A White Paper from the Energy Systems Integration Group's Retail Pricing Task Force

January 2023

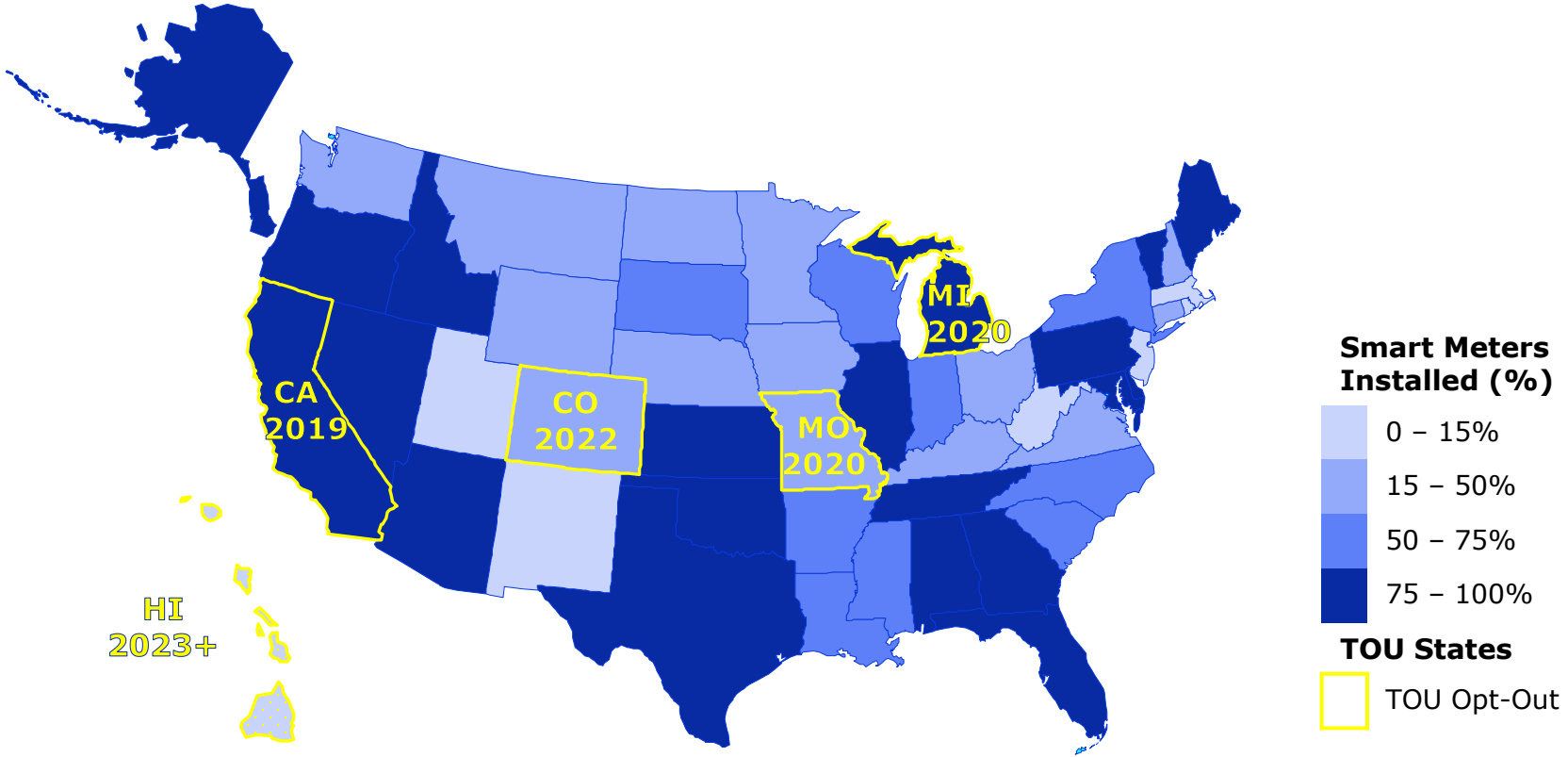
ESIG
ENERGY SYSTEMS INTEGRATION GROUP

Why Is the Smart Grid So Dumb?

Travis Kavulla
Vice President of Regulatory Affairs, NRG

Restructuring Roundtable - Boston
March 24, 2023

AMI is widely deployed, but rarely used for retail pricing



Adapted from: Cooper and Shuster, "Electric Company Smart Meter Deployments: Foundation for a Smart Grid," Institute for Electric Innovation, April 2021, p. 3.

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National Grid Basic Service and competitive offers in Massachusetts

Basic Service Rates (R-1)

Month	Fixed Price	Variable Price
Apr 2023	33.891 ¢	25.248 ¢
Mar 2023	33.891 ¢	29.733 ¢
Feb 2023	33.891 ¢	39.776 ¢
Jan 2023	33.891¢	40.500 ¢
Dec 2022	33.891 ¢	35.959 ¢
Nov 2022	33.891 ¢	28.571 ¢
Oct 2022	11.491 ¢	11.610 ¢
Sep 2022	11.491 ¢	11.177 ¢

MA Shopping Site Listings

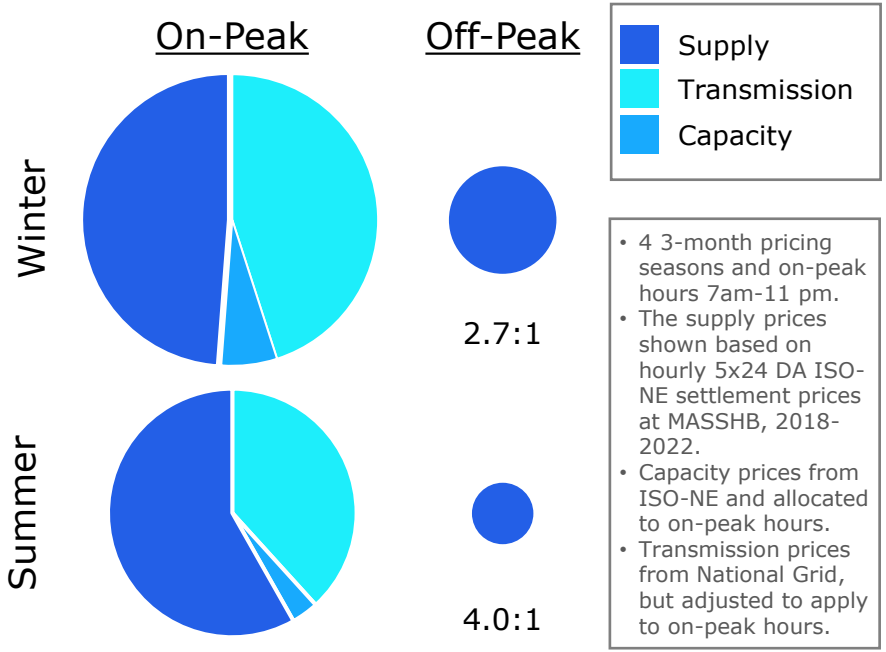
Electric Supply Products

SUPPLIER NAME	PRICE	CONTRACT TERM	RENEWABLE ENERGY
Basic Service	33.891 ¢/kWh TBD	Nov '22 through Apr '23 May '23 through Oct '23	Required:59% | Voluntary:0% TOTAL : 59%
townsquare energy Sign Up Compare	12.270 ¢/kWh	8 months No cancellation fee Automatic renewal	Required:59% | Voluntary:0% TOTAL : 59%
clearview ENERGY Live Green Sign Up Compare	12.290 ¢/kWh	9 months Cancellation fee Automatic renewal	Required:59% | Voluntary:0% TOTAL : 59%
Direct Energy. Sign Up Compare	12.890 ¢/kWh	8 months No cancellation fee Automatic renewal	Required:59% | Voluntary:41% TOTAL : 100% | 100%
Provider Power Sign Up Compare New Customers Only	12.990 ¢/kWh	6 months Cancellation fee Automatic renewal	Required:59% | Voluntary:0% TOTAL : 59%
RENAISSANCE POWER & GAS		7 months	Required:59% | Voluntary:0%

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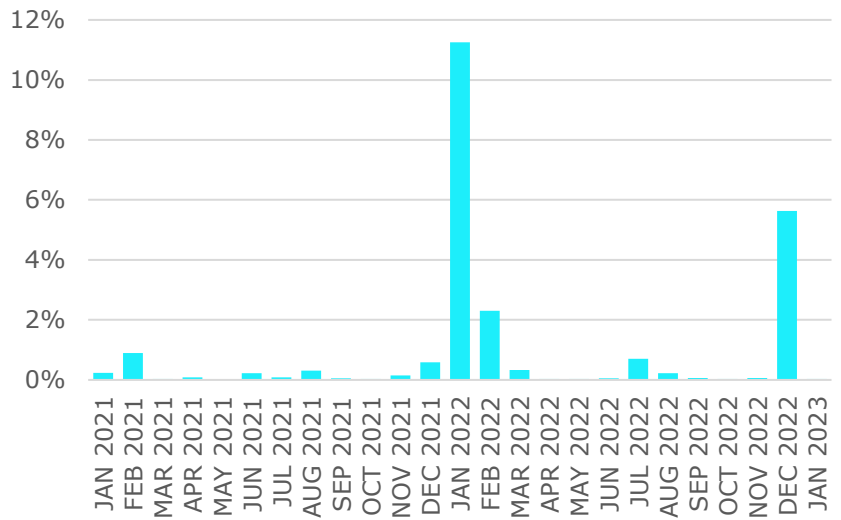
Price signals tell customers every kWh is the same, and they don't respond to cost peaks

National Grid MA could have a TOU supply price spread of 3x- 4x



- 4 3-month pricing seasons and on-peak hours 7am-11 pm.
- The supply prices shown based on hourly 5x24 DA ISO-NE settlement prices at MASSHB, 2018-2022.
- Capacity prices from ISO-NE and allocated to on-peak hours.
- Transmission prices from National Grid, but adjusted to apply to on-peak hours.

Oil-fired generation as a % of total supply in ISO-NE 01/21 to 01/23



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Someone, somewhere, has to face a price signal for demand activation to happen

1. Basic service should be a default TOU with Critical Peak Pricing optionality

2. Retailers can be better positioned to offer time-varying rates or incentive- or rebate-based DR, but only if they
   a) Get to manage not just energy supply costs, but all rate elements
   b) Get access to AMI data / have customers' loads settled on AMI
   c) Own the customer bill

3. Public investment/standards for devices

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